



STENNIS SPACE CENTER

John C. Stennis Space Center Fact Sheet

The John C. Stennis Space Center (SSC) is NASA's primary center for testing large rocket propulsion systems for the Space Shuttle and future generation space vehicles. Because of its important role in engine and vehicle testing over the past three decades, Stennis Space Center has been designated NASA's Center of Excellence for large propulsion systems testing. SSC is one of 10 NASA field centers and is located in Hancock County, Miss.

Mississippi entered the space age in the early 1960s when NASA announced plans to place its test facilities for the Saturn V moon rocket in South Mississippi. Less than eight years later, American astronauts walked on the lunar surface, safely transported hundreds of thousands of miles from Earth by a space vehicle equipped with first and second stages tested and proven flightworthy at Stennis Space Center.

Upon completion of the Apollo and Skylab programs, the center's role in engine testing moved to the next step in space travel--the Space Shuttle. Using its three large Apollo era test stands with thrust capability to 15 million pounds, SSC's primary mission is to test and flight certify the Space Shuttle's main engines, which power the vehicle during its eight and one-half minutes of flight prior to orbit. Stennis began testing the main engines in June 1975.

The Space Shuttle remains a reliable means to access low-Earth orbit, and SSC will continue to support this program by testing the Space Shuttle Main Engine (SSME) into the 21st century. SSC will also continue to perform development tests on new flight hardware for the main engine to improve performance and reduce costs. Pratt & Whitney's alternate turbopump, which is expected to reduce engine maintenance and increase safety, and the Rocketdyne Phase II+ powerhead, which permits the SSME to achieve its required nominal thrust while operating the fuel turbine at lower temperatures and pressures, will continue to be tested at SSC.

In keeping with its designation as NASA's Center of Excellence for large propulsion systems testing, SSC has been assigned to develop the capabilities to test the propulsion systems hardware for future vehicles that will replace the Space Shuttle.

Stennis Space Center will be prepared to test much of the propulsion hardware for future launch vehicles at its state-of-the-art E-1 Test Facility. This flexible, three-celled ground test facility, which is partially operational at this time, will be capable of a wide variety of testing to include rocket engine testing using liquid hydrogen or hydrocarbon fuels, solid or hybrid rocket motor testing, or other testing involving high flow rate, ultra-high-pressure gases and high-pressure cryogenic fluids. The facility will be performing tests on rocket engines and space vehicle system components. Stennis Space Center's research engineers also use the E-1 Test Facility to advance knowledge in test technology areas such as instrumentation, engine exhaust plume analysis, test facility design and evaluation, and data acquisition.

Stennis Space Center's High Heat Flux Facility gives SSC the capability to perform high-temperature tests on materials for hypersonic aircraft of the future. A subscale graphite/epoxy liquid hydrogen fuel tank for the National Aero-Space Plane underwent thermal structural tests in this facility during the summer of 1994.

Through the Advanced Program Development Office, SSC seeks other opportunities for use of its propulsion test facilities. The center is now conducting cooperative testing programs with U.S. aerospace industry, such as the hybrid rocket motor tests performed for a private company at SSC's E-1 Test Facility.

Stennis Space Center's state-of-the-art test facilities, experienced test personnel, canal system and unique 125,828-acre buffer zone, which are all national assets, are available to support the national interests in propulsion system development testing.

Personnel at SSC are also involved in a broad range of research and technology projects including the development of remote sensing technology, Earth sciences research, associated data systems development and technology transfer. The states of Mississippi and Louisiana have technology transfer offices located at Stennis.

Stennis Space Center is NASA's lead center for the commercialization of remote sensing applications. As such, it works to assist companies involved in environmental consulting, land use planning and natural resource management. Through these co-funded partnerships, companies use NASA-developed technology to develop information products. SSC also provides the bridge between NASA's Small Spacecraft Technology Program and the private sector for developing commercial remote sensing applications.

In addition, Stennis personnel work on a wide range of science projects to better understand our planet. These include preserving the tropical rain forest in Central America, studying sea surface temperatures to determine conditions for red tide outbreak, plant stress analysis and monitoring cultural and historical archaeological sites.

SSC is unique in NASA in that the center serves as host to 21 other federal and state agencies and university elements located at Stennis, including the U.S. Navy's world-class oceanographic and meteorological command. The center is also unique in that all agencies share common facilities, services and capabilities so that each may accomplish its independent mission at Stennis in a more cost-effective manner.

Approximately 3,500 people are employed at SSC, and Roy S. Estess is the director.



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